# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE |
|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** |

| | COST (In Thousands) | FY 2008 Actual | FY 2009 Estimate | FY 2010 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|
| | Total Program Element (PE) Cost | 56549 | 22340 | 28936 | Continuing | Continuing |
| 126 | FAAD C2 ED | 1295 | 2971 | 3713 | Continuing | Continuing |
| 146 | AIR & MSL DEFENSE PLANNING CONTROL SYS (AMC PCS) | 9808 | 9484 | 15512 | Continuing | Continuing |
| 149 | COUNTER-ROCKETS, ARTILLERY & MORTAR (C-RAM) DVPMT | 45446 | 9885 | 9711 | Continuing | Continuing |

**A. Mission Description and Budget Item Justification:** The Air and Missile Defense Planning and Control System (AMDPCS) is an Army Objective Force System that provides integration of Air and Missile Defense (AMD) operations at all echelons. AMDPCS systems are deployed with Air Defense Artillery (ADA) brigades, Army Air and Missile Defense Commands (AAMDCs), and Air Defense and Airspace Management (ADAM) Cells at the Brigade Combat Teams (BCT's), Fires Brigades and Divisions. AMDPCS systems also provide air defense capabilities to Homeland Defense systems.

AMDPCS has three major components:
(1) The Air and Missile Defense Workstation (AMDWS) is an automated defense and staff planning tool that displays the common tactical and operational air picture. AMDWS provides the Battle Command (BC) capabilities embedded within the Warfighter Mission area. AMDWS is also the Net-centric interface to BC for all components of the AMD force. AMDWS provides an interoperability link to multinational air defense forces IAW Annex C to a Joint US/NATO Air Defense Agreement;
(2) The Air Defense System Integrator (ADSI) is a communications data link processor and display system that provides near-real time joint airspace situational awareness and fire direction command and control for Air and Missile Defense forces;
(3) The Army Air Defense shelter configurations use automated data processing equipment, tactical communications, Common Hardware Systems, standard vehicles and tactical power to provide AMD unit commanders and staffs with the capabilities to plan missions, direct forces, and control the airspace.

The Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I) System provides continuously tailored situational awareness and situational understanding of the battlespace (including data on threat aircraft, cruise missiles and unmanned aerial vehicles (UAVs) to support the planning and decision process at various levels of command. The mission is to collect, digitally process and disseminate real time target cueing and tracking information, common tactical air picture, and C2I information to all Short Range Air Defense (SHORAD) weapons (Avenger, Bradley Linebacker, Manportable Air Defense System (MANPADS), joint and combined arms). Unique FAAD C2 software will provide this mission capability by integrating FAAD C2 engagement operations software with the Joint Digital Radio (JDR), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location Reporting System (EPLRS), Global Positioning System (GPS), Airborne Warning and Control System (AWACS), Sentinel and the Army Battle Command System (ABCS) architecture. Provides joint C2 interoperability and horizontal integration with PATRIOT, THAAD, MEADS, JLENS and SHORAD weapon systems by fusing sensor data to create a scalable and filterable single integrated air picture (SIAP) and common operating picture (COP) at Army divisions and below. System software will provide target data and engagement commands/status to the Surface Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM) air defense system. A small portion of RDTE funding is dedicated to SLAMRAAM C2 threshold requirements. FAAD C2 is the first system to digitize for Army Transformation in the First Digitized Division (FDD), III (Digitized) Corps, the Joint Contingency Force (JCF) and the STRYKER Brigade Combat Teams (SBCTs). The FAAD C2 netted and

distributed system architecture has been briefed as the basis for a potential BM/C4I Future Combat System (FCS).

Counter-Rockets, Artillery and Mortar (C-RAM) is a spiral Initiative Non-Developmental program initiated by the Army Chief of Staff in response to Iraqi threat and twice validated theater ONS. The primary mission of the C-RAM program is to develop, procure, field and maintain a system of systems that can detect rocket, artillery or mortar launches; warn the defended area with sufficient time for personnel to take cover; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. C-RAM utilizes a system of systems (SoS) approach, and is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) systems and a modified U.S. Navy intercept system, with a low cost commercial off-the-shelf (COTS) warning system and wireless local area network. The system will be fielded to various fixed or sites, providing them correlated air and ground pictures and linking them to the Army Battle Command System (ABCS) and the Joint Defense Network (JDN), via various forms of communications to provide situational awareness and exchange of timely and accurate information to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond and Protect decisions.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE |
|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** |

| **B. Program Change Summary** | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Previous President's Budget (FY 2009) | 21375 | 22415 | 23267 |
| Current BES/President's Budget (FY 2010) | 56549 | 22340 | 28936 |
| Total Adjustments | 35174 | -75 | 5669 |
| Congressional Program Reductions | | -75 | |
| Congressional Rescissions | | | |
| Congressional Increases | | | |
| Reprogrammings | 35751 | | |
| SBIR/STTR Transfer | -577 | | |
| Adjustments to Budget Years | | | 5669 |

Change Summary Explanations: Funding: FY10 increase is for FAAD C2 shortfalls in IPV6 implementation and software re-hosting. Also funds AMDPCS Air Defense Software Blocking, Air Defense functionality, AMD interfaces to other Air Defense Systems, and ADSI 15.0, 15.1 functionality.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | **126** |

| COST (In Thousands) | FY 2008 Actual | FY 2009 Estimate | FY 2010 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|
| 126 FAAD C2 ED | 1295 | 2971 | 3713 | Continuing | Continuing |

**A. Mission Description and Budget Item Justification:** The Forward Area Air Defense Command and Control (FAAD C2) system collects, digitally processes, and disseminates real-time target cuing and tracking information; the common tactical air picture; and command, control, and intelligence information to all Maneuver Air and Missile Defense (MAMD) weapon systems (Avenger and Man-Portable Air Defense System (MANPADS), and joint and combined arms systems. The FAAD C2 system provides alerting data to air defense gunners, airspace battle management, and up-linking of mission operations, thereby enhancing force protection against air and missile attack. Situational awareness and targeting data is provided on threat aircraft, cruise missiles, and unmanned aerial systems (UAS). The FAAD C2 system provides this mission capability by integrating dynamic FAAD C2 engagement operations software with the Multifunctional Information Distribution System (MIDS), Joint Tactical Terminal (JTT), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location System (EPLRS), Global Positioning System (GPS), Airborne Warning and Control Systems (AWACS), Sentinel radar, and the Army Battle Command System (ABCS) architecture. In addition, FAAD C2 provides interoperability with Joint C2 systems and horizontal integration with PATRIOT, Theater High-Altitude Area Defense (THAAD), Medium Extended Air Defense System (MEADS), and the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) by fusing sensor data to create a scalable and filterable Single Integrated Air Picture (SIAP) and common tactical picture. The system software is a key component of the Air Defense and Airspace Management (ADAM) Cell that is being fielded to Stryker Brigade Combat Teams (SBCT), Brigade Combat Teams (BCTs), and Division Headquarters as part of the Army's modularity concept. System software is able to provide target data and engagement commands/status to MAMD Battalions. FAAD C2 is also a principal air defense system within the Homeland Security Program. Soldiers from activated ARNG MAMD battalions operate the FAAD C2 systems in the National Capital Region and other locations.

Program funding enables fielding of equipment to the current force to support the Army's Program Objective to rapidly respond to immediate threats to Soldiers, identifies promising technologies, procures and integrates those capabilities for deployed forces in the same year. As capability gaps are identified by deployed forces, this program provides the ability for the Army to procure high priority/high leverage technology from industry during the same year, with the highest priority going to candidates that cover a multitude of gap areas. Program funding provides a method to rapidly keep pace with leading edge technologies and maintain interoperability and backwards compatibility caused by improvement to other system components (upgrade from common hardware version 2 to 3 and EPLRS enhancements).

In support of the Global War on Terrorism, FAAD C2 systems are in MAMD units and ADAM Cells deployed to Iraq and Afghanistan. These FAAD systems are critical in providing the local air picture to supported units and higher headquarters. FAAD C2 systems will also provide target tracks and weapon controls for the initial C-RAM capability deployed to Iraq.

| **Accomplishments/Planned Program:** | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Support FAAD C2 software development for new Air and Missile Defense Composite Battalions, including unique software enhancements in support of Homeland Defense and security accreditation upgrades. Integrate Sentinel radar Enhanced Target, Range and Classification (ETRAC). Continue integration of interfaces for the Joint Tactical Terminal (JTT), and design Joint Tactical Radio System | 1295 | | 3267 |

| | | | |
|---|---|---|---|
| (JTRS) interfaces. Incorporate IFF modes 1,2 and 3 (active decode) capabilities. | | | |
| Implement software modifications necessary for Internet Protocol version 6 (IPv6). | | 2902 | 446 |
| Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR) | | 69 | |
| Total | 1295 | 2971 | 3713 |

| **B. Other Program Funding Summary** | FY 2008 | FY 2009 | FY 2010 | To Compl | Total Cost |
|---|---|---|---|---|---|
| OPA 2, AD5050 - FAAD C2 | 32001 | 7467 | 8289 | Continuing | Continuing |
| Spares (BS9702) - FAAD C2 | | | | Continuing | Continuing |

Comment:

**C. Acquisition Strategy** The FAAD C2 acquisition strategy relies on evolutionary software development to rapidly meet the demands of air defense battle management/command, control, communications, computers, and intelligence (BM/C4I) requirements, and to keep pace with automated information technologies. The concept of evolutionary software development is being followed and will be accomplished in Blocks I, II, and III. Blocks I and II and III have been completed. Left to be completed is the Implementation of IPv6.

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

BUDGET ACTIVITY
**5 - System Development and Demonstration**

PE NUMBER AND TITLE
**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

PROJECT
**126**

| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Northrop Grumman/TRW, BLK I | C/CPIF | Carson, CA | 176461 | | | | | | | | 176461 | |
| Northrop Grumman/TRW, BLK II | SS/CPIF | Carson, CA | 32206 | | | | | | | | 32206 | |
| Northrop Grumman/TRW, BLK III | SS/CPIF | Carson, CA | 106360 | | | | | | | Cont. | 98961 | |
| Northrop Grumman/TRW | SS/T&M | Carson, CA | 13567 | 92 | 1Q | 205 | 1Q | 340 | 1Q | Cont. | Cont. | |
| Northrop Grumman | | | 4276 | 769 | 1Q | 1797 | 1Q | 2248 | 1Q | Cont. | Cont. | |
| Program Management Administration | MIPR | Various | 38159 | 130 | 2Q | 296 | 2Q | 296 | 2Q | Cont. | Cont. | |
| Sentinel GBS | MIPR | Huntsville, AL | 3791 | | | | | | | | 3791 | |
| JTIDS | MIPR | Ft. Monmouth, NJ | 6000 | | | | | | | Cont. | 6000 | |
| ABCS SE&I | MIPR | Ft Monmouth, NJ | 346 | | | | | | | | 346 | |
| Software Engineering | Various | Various | 20852 | 93 | 1-4Q | 206 | 1-4Q | 257 | 1-4Q | Cont. | Cont. | |
| C-RAM Sense, Warn & Intercept | Various | Variuos | 83842 | | | | | | | | 83842 | |
| Subtotal: | | | 485860 | 1084 | | 2504 | | 3141 | | Cont. | Cont. | |

| II. Support Costs | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal: | | | | | | | | | | | | |

| III. Test And Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADATD | MIPR | Ft Bliss, TX | 12580 | 37 | 1-4Q | 83 | 1-4Q | 104 | 1-4Q | Cont. | Cont. | |

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | **126** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RTTC | MIPR | WSMR, NM | 2947 | | | | | | | Cont. | Cont. | |
| AATD | MIPR | Ft Eustis, VA | 365 | 7 | 1-4Q | 13 | 1-4Q | 23 | | Cont. | Cont. | |
| ATEC | MIPR | Alexandria, VA | 2234 | 36 | 1-4Q | 81 | 1-4Q | 99 | | Cont. | Cont. | |
| Yuma Proving Ground | MIPR | Yuma, AZ | 8098 | 131 | 1-4Q | 290 | 1-4Q | 346 | | Cont. | Cont. | |
| Subtotal: | | | 26224 | 211 | | 467 | | 572 | | Cont. | Cont. | |

| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal: | | | | | | | | | | | | |

Remarks: Not Applicable

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Total Cost:** | **512084** | **1295** | | **2971** | | **3713** | | **Cont.** | **Cont.** | |

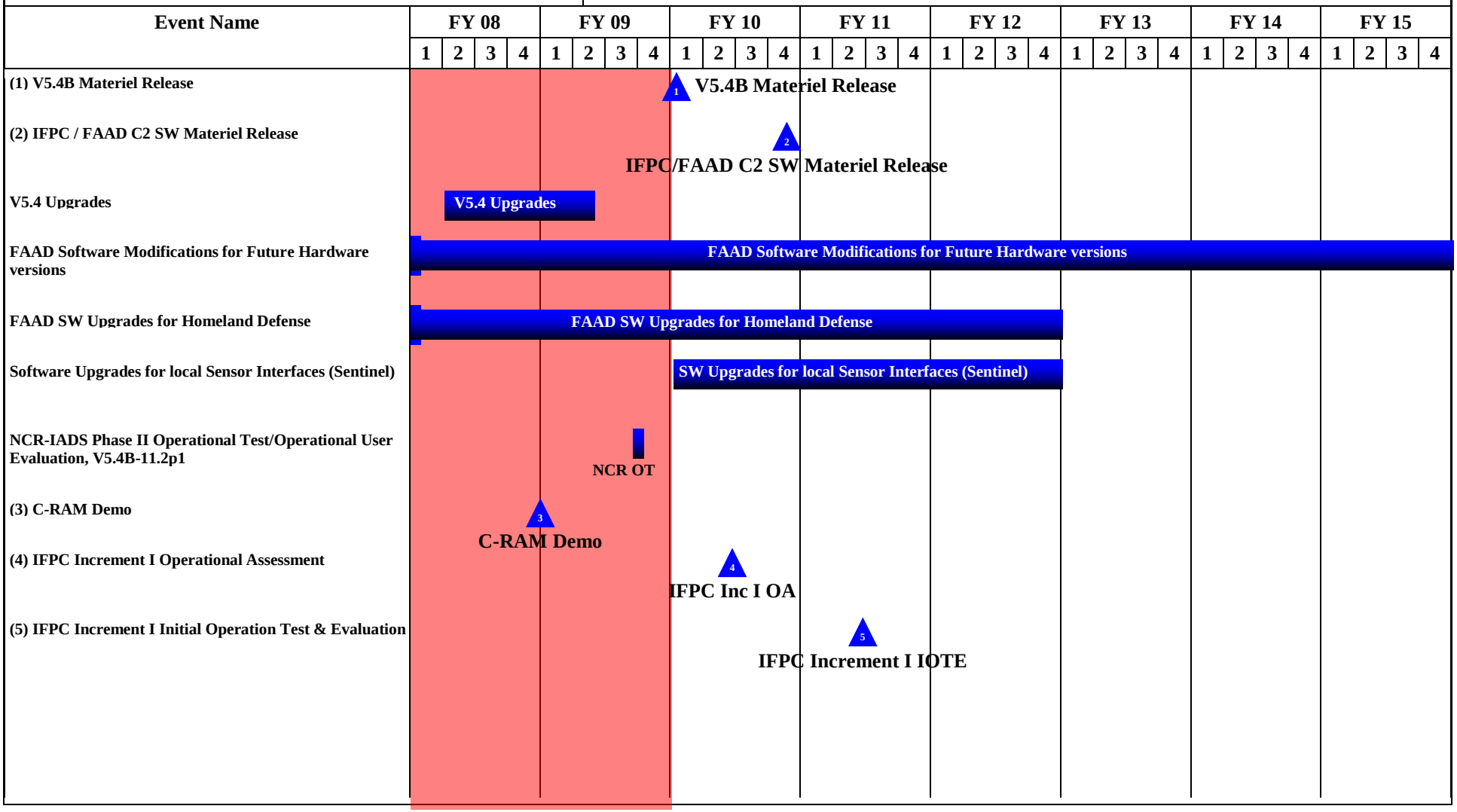
# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
**5 - System Development and Demonstration**

PE NUMBER AND TITLE
**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

PROJECT
**126**



# Schedule Detail (R4a Exhibit)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | **126** |

| Schedule Detail | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|---|---|
| V5.4B Materiel Release | | | 1Q | | | | | |
| IFPC / FAAD C2 SW Materiel Release | | | 4Q | | | | | |
| V5.4 Upgrades | 2Q - 4Q | 1Q - 2Q | | | | | | |
| FAAD Software Modifications for Future Hardware versions | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| FAAD SW Upgrades for Homeland Defense | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | | | |
| Software Upgrades for local Sensor Interfaces (Sentinel) | | | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | | | |
| NCR-IADS Phase II Operational Test/Operational User Evaluation, V5.4B-11.2p1 | | 3Q - 4Q | | | | | | |
| C-RAM Demo | 4Q | | | | | | | |
| IFPC Increment I Operational Assessment | | | 2Q | | | | | |
| IFPC Increment I Initial Operation Test & Evaluation | | | | 2Q | | | | |

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | **146** |

| COST (In Thousands) | | FY 2008 Actual | FY 2009 Estimate | FY 2010 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|
| 146 | AIR & MSL DEFENSE PLANNING CONTROL SYS (AMC PCS) | 9808 | 9484 | 15512 | Continuing | Continuing |

**A. Mission Description and Budget Item Justification:** The Air and Missile Defense Planning and Control System (AMDPCS) is an Army Objective Force System that provides integration of Air and Missile Defense (AMD) operations at all echelons. AMDPCS systems are deployed with Air Defense Artillery (ADA) brigades, Army Air and Missile Defense Commands (AAMDCs), and Air Defense and Airspace Management (ADAM) Cells at the Brigade Combat Teams (BCT's), Fires Brigades and Divisions. AMDPCS systems also provide air defense capabilities to Homeland Defense systems.
The development of ADAM Cells is essential in fulfilling the Army's Modularity requirement. ADAM Cells provide the Commander at BCTs, Brigades and Divisions with air defense situational awareness and airspace management capabilities. They also provide the interoperability link with Joint, multinational and coalition forces. AMDPCS components are vital in the transformation of ADA units and the activation of the Maneuver Air & Missile Defense (MAMD) Composite Battalions. AMDPCS has three major components:
(1) The Air and Missile Defense Workstation (AMDWS) is an automated defense and staff planning tool that displays the common tactical and operational air picture. AMDWS provides the Battle Command (BC) capabilities embedded within the Warfighter Mission area. AMDWS is also the Net-centric interface to BC for all components of the AMD force. AMDWS provides an interoperability link to multinational air defense forces IAW Annex C to a Joint US/NATO Air Defense Agreement;
(2) The Air Defense System Integrator (ADSI) is a communications data link processor and display system that provides near-real time, 3-dimensional, joint airspace situational awareness and fire direction command and control for Air and Missile Defense forces;
(3) The Army Air Defense shelter configurations use automated data processing equipment, tactical communications, Common Hardware Systems, standard vehicles and tactical power to provide AMD unit commanders and staffs with the capabilities to plan missions, direct forces, and control the airspace.

In support of the Global War on Terrorism (GWOT), AMDWS and ADSIs are vital components of the AMDPCS shelter systems fielded to ADAM Cells that have deployed to Iraq and Afghanistan. In addition, these components have also been integrated into non-ADA higher headquarters such as the Coalition Forces Land Component Command (CFLCC). AMDWS is a critical component in the integration and fielding of a Counter-Rocket, Artillery and Mortar (C-RAM) capability to Operating Bases in Iraq and elsewhere. In support of Homeland Defense missions, the AMDWS has been integrated as the Force Operations component into the Joint Service/Air Force architecture. These AMDPCS systems provide the common tactical air picture, a major component of the Common Operating Picture (COP), and are critical to the development and planning of offensive and defensive operations.

FY10 funds the development, software engineering, testing and certificiation of the AMDWS, ADSI, and sheltered subsystem software as described below.

| **Accomplishments/Planned Program:** | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Continue AMDWS development and support of LANDWARNET/Battle Command Framework. Complete AMDWS software engineering and development consistent with Software Block 2, 2+ and 3 requirements, evolving the air and missile defense planning and | 5503 | 5716 | 9759 |

| | | | |
|---|---|---|---|
| control requirements to a net-centric environment, and fulfilling the air defense force operations capabilities identified in the AMD TRADOC capabilities requirement list. Continue AMDWS software development and rehost onto emerging light/laptop common hardware systems. Continue integration of the PATRIOT Air Defense system Tactical Planner (PTP) and the Theater Battle Management Core Systems (TBMCS). Initiate development of the SLAMRAAM, JLENS, MEADS and Joint Theater Battle Operations Net-Centric Environment interfaces. Continue supporting the Air Force Joint Tactical Air and Missile Defense (JTAMD), and support the evolving development of the Force Operations portion of the Integrated Air and Missile Defense (IAMD) System of Systems. Continue AMDWS within the Capability Set management Process, while working to implement the Unified Battle Command SoS approach. | | | |
| Continue ADSI software engineering and development in software versions 14.1.1, 15, and 15.1 including development of capabilities for TAC View Situational Awareness, with air control support, scenario generation and 3-dimensional capability, full TADIL-J, Joint Range Extension Application Protocols (JREAP) for link 16 messages, MIDS TADIL-J connectivity, and Windows XP Pro and LINUX Realtime. | 1232 | 1050 | 1720 |
| Continue engineering, development, test and evaluation of the AMDPCS shelter subsystem Objective configurations; continue evaluation and definitization of the AMDPCS tactical communications, data processing and vehicle/shelter/power generation/environmental system block upgrade program for fielded systems. | 1950 | 1668 | 2733 |
| Continue software system certification testing, accreditation, and approval of Authority-to-Operate for the various software systems; continue Army and Joint integration and interoperability assessments. | 1123 | 792 | 1300 |
| Small Business Innovative Research/Small Business Technology Transfer Programs. | | 258 | |
| Total | 9808 | 9484 | 15512 |

| **B. Other Program Funding Summary** | FY 2008 | FY 2009 | FY 2010 | To Compl | Total Cost |
|---|---|---|---|---|---|
| OPA, AD 5070 - AMDPCS | 84751 | 57483 | 62439 | Continuing | Continuing |

Comment:

**C. Acquisition Strategy** The acquisition strategy relies on non-development items (NDI) and evolutionary software development to rapidly meet the demands of air defense battle management command, control, communications, computers, and intelligence (BM/C4I) requirements and to keep pace with automated information technologies. The concept of evolutionary software development will be accomplished in a series of AMDWS and ADSI Block releases and upgrades. AMDPCS is being developed for both the Army's Active and Reserve components.

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

BUDGET ACTIVITY
**5 - System Development and Demonstration**

PE NUMBER AND TITLE
**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

PROJECT
**146**

| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Northrop Grumman/TRW | SS/CPIF | Huntsville, AL | 54950 | 5621 | | 5593 | | 9301 | | Cont. | Cont. | |
| ULTRA Electronics, ADSI | SS/CPIF | Austin, TX | 5882 | 144 | | 133 | | 219 | | Cont. | Cont. | |
| Program Management Administration | Various | Various | 29516 | 3267 | | 3099 | | 4990 | | Cont. | Cont. | |
| ABCS SE&I | MIPR | Ft Monmouth, NJ | 619 | | | | | | | | 619 | |
| Software Engineering | Various | Various | 7906 | 718 | | 607 | | 919 | | Cont. | Cont. | |
| Subtotal: | | | 98873 | 9750 | | 9432 | | 15429 | | Cont. | Cont. | |

| II. Support Costs | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal: | | | | | | | | | | | | |

| III. Test And Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Certification | MIPR | JITC, Ft Huachuca, AZ | 717 | 36 | | 33 | | 53 | | Cont. | Cont. | |
| Interoperability Assessment | MIPR | CTSF, Ft. Hood, TX | 1170 | 22 | | 19 | | 30 | | Cont. | Cont. | |
| Subtotal: | | | 1887 | 58 | | 52 | | 83 | | Cont. | Cont. | |

| IV. Management Services | Contract Method & | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award | FY 2009 Cost | FY 2009 Award | FY 2010 Cost | FY 2010 Award | Cost To Complete | Total Cost | Target Value of |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

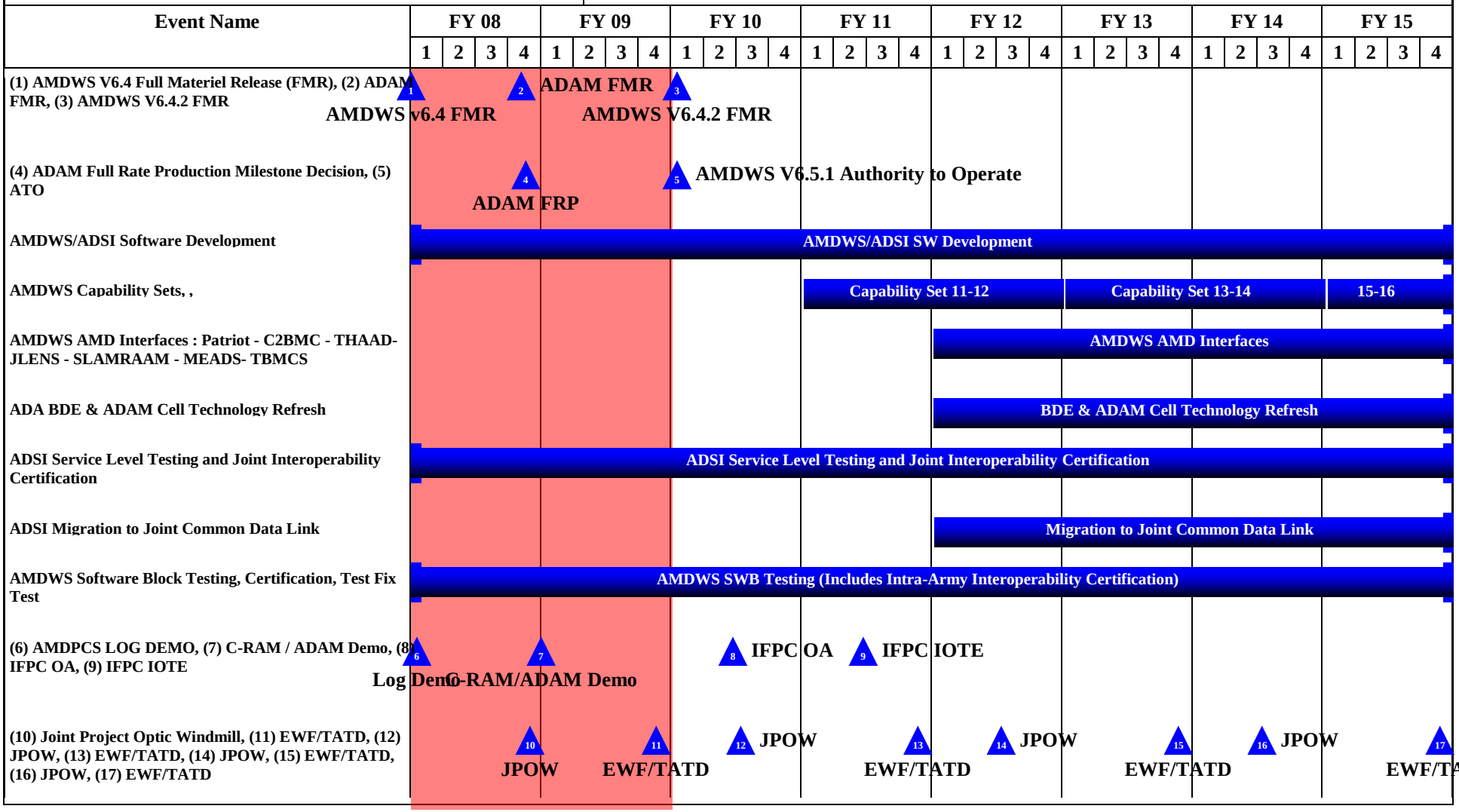
| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | **146** |

| | Type | | | | Date | | Date | | Date | | | Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal: | | | | | | | | | | | | |
| Remarks: Not Applicable | | | | | | | | | | | | |
| **Project Total Cost:** | | | **100760** | **9808** | | **9484** | | **15512** | | **Cont.** | **Cont.** | |

# Schedule Profile (R4 Exhibit)

May 2009

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| 5 - System Development and Demonstration | 0604741A - Air Defense Command, Control and Intelligence - Eng Dev | 146 |



# Schedule Detail (R4a Exhibit)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | **146** |

| Schedule Detail | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|---|---|
| AMDWS V6.4 Full Materiel Release (FMR) | 1Q | | | | | | | |
| ADAM FMR | 4Q | | | | | | | |
| AMDWS V6.4.2 FMR | | | 1Q | | | | | |
| ADAM Full Rate Production Milestone Decision | 4Q | | | | | | | |
| ATO | | | 1Q | | | | | |
| AMDWS/ADSI Software Development | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| AMDWS Capability Sets | | | | 1Q - 4Q | 1Q - 4Q | | | |
| | | | | | | 1Q - 4Q | 1Q - 4Q | |
| | | | | | | | | 1Q - 4Q |
| AMDWS AMD Interfaces : Patriot - C2BMC - THAAD- JLENS - SLAMRAAM - MEADS-TBMCS | | | | | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| ADA BDE & ADAM Cell Technology Refresh | | | | | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| ADSI Service Level Testing and Joint Interoperability Certification | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| ADSI Migration to Joint Common Data Link | | | | | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| AMDWS Software Block Testing, Certification, Test Fix Test | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| AMDPCS LOG DEMO | 1Q | | | | | | | |
| C-RAM / ADAM Demo | 4Q | | | | | | | |
| IFPC OA | | | 2Q | | | | | |
| IFPC IOTE | | | | 2Q | | | | |
| Joint Project Optic Windmill | 4Q | | | | | | | |
| EWF/TATD | | 4Q | | | | | | |
| JPOW | | | 3Q | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| EWF/TATD | | | | 4Q | | | | |
| JPOW | | | | | 3Q | | | |
| EWF/TATD | | | | | | 4Q | | |
| JPOW | | | | | | | 3Q | |
| EWF/TATD | | | | | | | | 4Q |

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | **149** |

| COST (In Thousands) | | FY 2008 Actual | FY 2009 Estimate | FY 2010 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|
| 149 | COUNTER-ROCKETS, ARTILLERY & MORTAR (C-RAM) DVPMT | 45446 | 9885 | 9711 | Continuing | Continuing |

**A. Mission Description and Budget Item Justification:** Counter-Rockets, Artillery and Mortar (C-RAM) is an evolutionary Non-Developmental program initiated by the Army Chief of Staff in response to Iraqi threat and twice validated theater ONS. The primary mission of the C-RAM program is to develop, procure, field and maintain a system of systems that can detect rocket, artillery or mortar launches; warn the defended area with sufficient time for personnel to take cover; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. The C-RAM current capability utilizes a system of systems (SoS) approach, and is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) systems and a modified U.S. Navy intercept system, with a low cost commercial off-the-shelf (COTS) warning system and wireless local area network. The system is currently fielded to fifteen sites, providing them correlated air and ground pictures and linking them to the Army Battle Command System (ABCS) and the Joint Defense Network (JDN), via various forms of communications to provide situational awareness and exchange of timely and accurate information to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond and Protect decisions.

The fielding of the C-RAM SoS was accomplished through an incremental acquisition process driven by urgent operational needs, theater priorities and emerging capability requirements to provide counter-RAM capability to fielded forces. The C-RAM Program Office has fielded equipment to fifteen (15) Forward Operating Bases (FOBs) (Sense, Warn and Intercept to three (3) FOBs; Sense and Warn to fifteen (15) additional FOBs). The C-RAM SoS approach was validated by a Proof of Principle demonstration in December 2004 and Army Test and Evaluation Command (ATEC) tests in Feb 05, Apr 05, Jul 05, Nov-Dec 05, Sep-Oct 06 and Sep-Oct 08 with another demonstration scheduled for Aug-Sep 09.

Current development efforts include the implementation of improvements and upgrades to fielded C-RAM and the initial development of Indirect Fire Protection Capability (IFPC) capabilities. C-RAM is the current program for the Iraq theater of operations. The follow-on program to address future requirements (mobile, semi-fixed and fixed sites) will be titled Indirect Fire Protection Capability (IFPC). In parallel with a Joint Fires Integration and Interoperability Team (JFIIT) led effort to develop JCIDS documemtation for IFPC program initiation, the Army is pursuing designation of IFPC as a Program of Record and establishment of a program office to provide materiel developer input to the JCIDS documentation.

| **Accomplishments/Planned Program:** | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Develop advanced user interface/capabilities | 35161 | | |
| Test/demonstration support for new C-RAM capabilities | 10285 | 1716 | 1993 |
| Develop Threat Evaluation and Weapons Assignment (TEWA) capabilities | | 2710 | 2590 |
| Integrate with Rapid Digital "Clearance of Fires" | | 1993 | 1912 |
| Develop Advanced Defense Design System Exerciser | | 1993 | 1993 |

| | | | |
|---|---|---|---|
| Support Joint, Interagency and Multi-national (JIM) interoperability (Common Link Integration Processing (CLIP) integration, communications improvement) | | 1196 | 1223 |
| Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR) | | 277 | |
| Total | 45446 | 9885 | 9711 |

| **B. Other Program Funding Summary** | FY 2008 | FY 2009 | FY 2010 | To Compl | Total Cost |
|---|---|---|---|---|---|
| OPA 2 BZ0526- COUNTER-ROCKETS, ARTILLERY& MORTAR (C-RAM) | 225772 | | | Continuing | Continuing |

Comment:

**C. Acquisition Strategy** The C-RAM program is following an evolutionary acquisition strategy for rapid acquisition of mature technology to the user. The approach will deliver capabilities in increments, recognizing up front the need for future improvements. The objective of the strategy is to balance needs and available capability with resources and put a robust capability to engage rockets, artillery, and mortars into the hands of the user quickly. Success will depend on continuous user feedback, consistent definition of capability needs, maturation of technology, and allocation of required resources. To achieve the evolutionary acquisition of C-RAM, the program director will collaborate and coordinate with the user, combat developer, tester, logistician, PEO C3T, and resource provider (e.g., G8). The program will follow the incremental development process (per DoDI 5000.02), where each increment is a military useful and supportable operational capability. The Capability Production Document(CPD) for IFPC Increment I (improved sense and warn) is currently in 3-Star Staffing with an AROC planned 3QFY09. A Capability Development Document (CDD) will be developed for IFPC Increment II (Interceptor and upgrades to other IFPC functions as required) based on the results of the Analysis of Alternatives (AoA).

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

BUDGET ACTIVITY
**5 - System Development and Demonstration**

PE NUMBER AND TITLE
**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

PROJECT
**149**

| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Northrop Grumman | ID/IQ CPFF | Carson, CA | | 12000 | | 2117 | | 2113 | | Cont. | Cont. | 70500 |
| Nortrop Grumman | CPIF | Carson, CA | | 32010 | | 6332 | | 6161 | | Cont. | Cont. | 40000 |
| Program Management Administration | MIPR | Various | | 1436 | 2Q | 1436 | 2Q | 1437 | 2Q | Cont. | Cont. | |
| Subtotal: | | | | 45446 | | 9885 | | 9711 | | Cont. | Cont. | 110500 |

| II. Support Costs | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal: | | | | | | | | | | | | |

| III. Test And Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal: | | | | | | | | | | | | |

| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2008 Cost | FY 2008 Award Date | FY 2009 Cost | FY 2009 Award Date | FY 2010 Cost | FY 2010 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal: | | | | | | | | | | | | |

| ARMY RDT&E COST ANALYSIS (R3) | | | | | | | | | | May 2009 |
|---|---|---|---|---|---|---|---|---|---|---|
| BUDGET ACTIVITY<br>**5 - System Development and Demonstration** | PE NUMBER AND TITLE<br>**0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | | | | | | | | | PROJECT<br>**149** |
| **Project Total Cost:** | | **45446** | | **9885** | | **9711** | | **Cont.** | **Cont.** | **110500** |

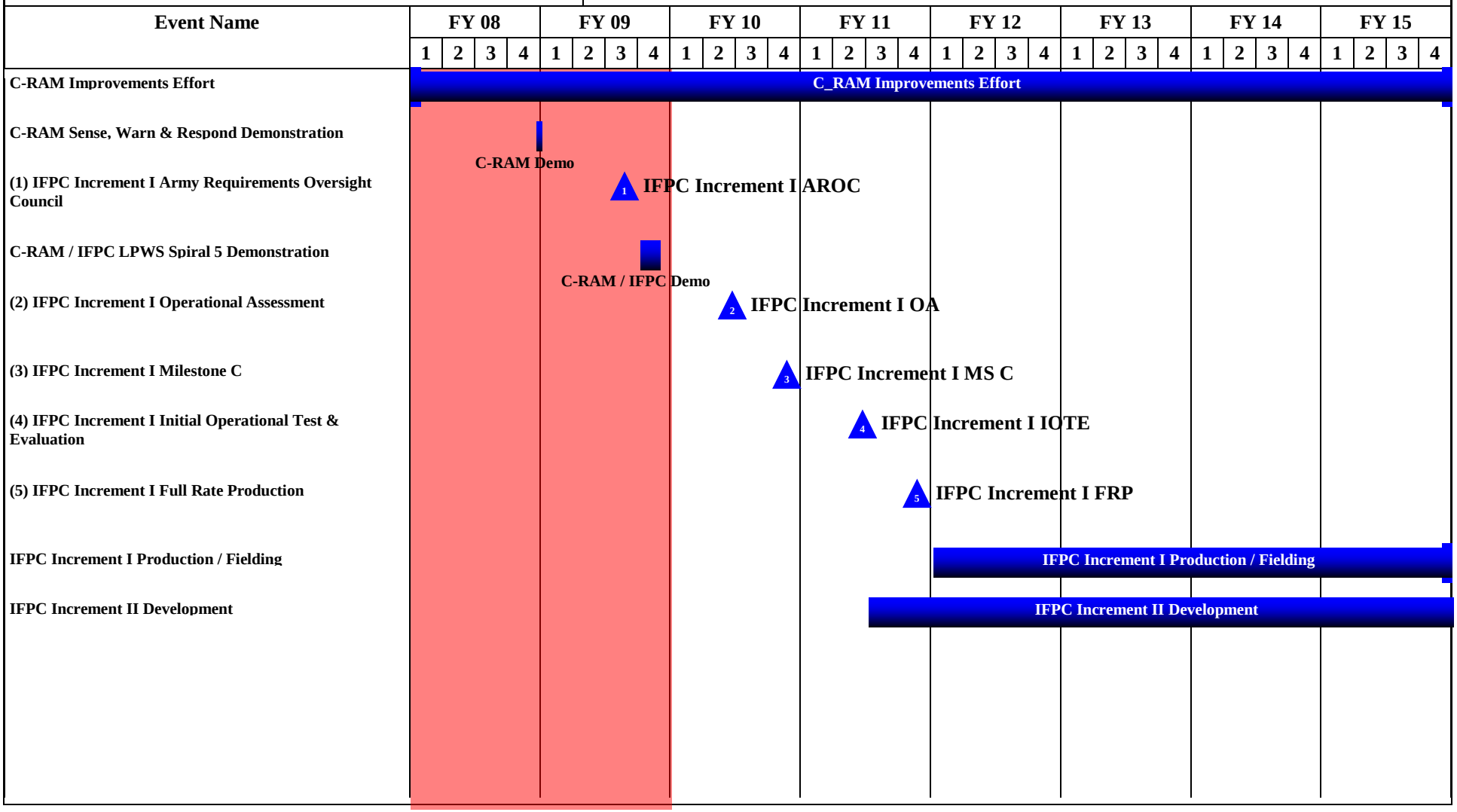
# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
**5 - System Development and Demonstration**

PE NUMBER AND TITLE
**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

PROJECT
**149**



# Schedule Detail (R4a Exhibit)

**May 2009**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - System Development and Demonstration** | **0604741A - Air Defense Command, Control and Intelligence - Eng Dev** | **149** |

| Schedule Detail | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|---|---|
| C-RAM Improvements Effort | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| C-RAM Sense, Warn & Respond Demonstration | 4Q | 1Q | | | | | | |
| IFPC Increment I Army Requirements Oversight Council | | 3Q | | | | | | |
| C-RAM / IFPC LPWS Spiral 5 Demonstration | | 4Q | | | | | | |
| IFPC Increment I Operational Assessment | | | 2Q | | | | | |
| IFPC Increment I Milestone C | | | 4Q | | | | | |
| IFPC Increment I Initial Operational Test & Evaluation | | | | 2Q | | | | |
| IFPC Increment I Full Rate Production | | | | 4Q | | | | |
| IFPC Increment I Production / Fielding | | | | | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |
| IFPC Increment II Development | | | | 3Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q | 1Q - 4Q |